

Remarks

Currently pending in the application are claims 1-5, 8-11 and 13-15.

Objections

The Examiner objected to claims 2-5, 9-11 and 15 and requested "Claim" not be capitalized. Applicant has amended claims 2-5, 9-11 and 15 as requested and requests the objections be withdrawn.

35 U.S.C. § 103(a)

The Examiner rejected claims 1-5 under 35 U.S.C. § 103(a) as being unpatentable over Goswami et al. (U.S. Pat. No. 4,652,398) in view of Blykahman (U.S. Pat. No. 5,591,811). The Examiner also rejected claims 8-11 as being unpatentable over Blykahman in view of Goswami et al. and Klein et al. (U. S. Pat. No. 6,245,835). Finally, the Examiner rejected claim 13 and 14 as being unpatentable over Das et al. (US 5,922,448) in view of Blyakhman and Goswami et al. and claim 15 as being unpatentable over Blykahman in view of Goswami et al. and Klein et al. and further in view of Das et al. Applicant traverses these rejections for the following reasons.

As presently claimed, claim 1 is directed to a composition containing A) a 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I) and B) a phenol selected from the group consisting of 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octyphenol, n-decylphenol, and O,O'-diallyl-bisphenol A with a weight ratio of component A) to component B) being from 25:75 to 50:50. Additionally, claim 8 is directed to a curable composition containing the A) and B) components at such a weight ratio together with an epoxy resin, curing agent and optionally additives, and claim 13 is directed to a method of making such a curable composition.

The Examiner notes that neither Blykahman, Klein, nor Das et al. teach or suggest a composition having a weight ratio of component A) to component B) of 25:75 to 50:50. The Examiner has added Goswami et al. for the purpose of teaching "a mixture of an imidazole compound at 2 parts by weight and 2,2'-diallyl bisphenol A, which is O,O'-diallyl bisphenol A, (Example 2, col. 6-7) in an amount of 7 parts by weight. This is a ratio of 22:78 of the imidazole component to phenol component." *See Office Communication mailed September 2, 2008* at page 2. Applicant respectfully disagrees for the following reasons.

Applicant agrees with the Examiner that Goswami et al. teach an imidazole component and phenol component. However, Goswami et al. does not teach a ratio of 22:78 of the imidazole component to phenol component as the Examiner urges. Rather, Goswami et al. teach a significantly smaller amount of imidazole component. In particular, Goswami et al. teach the use of 0.1% to 1% by weight of imidazole and 10% to 25% by weight of 2,2'-diallyl bisphenol A which corresponds to a ratio ranging from a 0.4:99.6 to 9.1:90.9 of the imidazole component to phenol component. *See US 4,652,398* at col. 3, line 35 to col. 4 line 24. Further demonstrating this ratio of ranges are Examples 1-5 in which 2-ethyl-4-methyl imidazole is combined with N-methyl pyrrolidone solvent to form a 10% solution while 2,2'-diallyl bisphenol A is combined with N-methyl pyrrolidone solvent to form a 67% solution. *See id.* at col. 6, line 45-47. Thus, the Example the Examiner refers to (Example 2) contains 0.2 parts of imidazole and 4.69 parts of 2,2'-diallyl bisphenol A rendering a ratio of 4.1:95.9 of the imidazole component to phenol component. Examples 1 and 3-5 contain even smaller amounts of imidazole (i.e. 1.6:98.4 and 2.4:97.6 of the imidazole component to phenol component).

Thus, Goswami et al. does not teach or suggest a ratio of imidazole component to phenol component that is even close to Applicant's presently claimed ratio.

Moreover, Applicant's claimed ratio is not one that has been optimized within the conditions taught in Goswami et al. by routine experimentation rendering Applicant's claims obvious. It is well established only result-effective variables can be optimized. See MPEP § 2144.05 B ("a particular parameter must first be recognized as a result-effective variable, i.e. a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.").

Goswami et al. neither teach nor suggest the imidazole component does anything other than routinely cure Goswami et al.'s adhesive composition. See US 4,652,398 at col. 4, lines 11-16 ("This [imidazole] curing agent, although needed to cure the system, can be added by someone other than the formulator of the adhesive and it is therefore considered an optional component in regard to the curable adhesive composition.").

Nevertheless, Applicant has surprisingly found the curing of epoxy resin systems at low temperatures can be accelerated and cured articles having higher than expected interlaminar shear strength can be achieved when 1-imidazolylmethyl-substituted 2-naphthol compounds of the general formula (I) are combined with 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octyphenol, n-decyphenol, or O,O'-diallyl-bisphenol A, at a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50. In particular, the claimed combination of the present invention is able to cure an epoxy resin system at temperatures between 60°-75°C (rather than temperatures greater than 100°C as generally taught) to provide cured articles having interlaminar shear strength values up to

50 MPa which is substantially higher than a composition containing the imidazole alone. *See present application* at Table 2, page 8. The Applicant found this both surprising and unexpected and this is neither taught nor suggested in Goswami et al.

Adding Blykahman to Goswami et al., namely for the purpose of teaching the 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I), does not bring one skilled in the art closer to Applicant's invention. For the reasons set forth above, neither Goswami et al. nor Blykahman, alone or together, teach or suggest a composition containing 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I) in combination with a phenol selected from the group consisting of 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octyphenol, n-decylphenol, and O,O'-diallyl-bisphenol A with a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50 as presently claimed.

Similarly, adding Klein et al. and/or Das et al. also does not bring one skilled in the art closer to Applicant's invention. For the reasons set forth above, neither publication cited above teaches or suggests a composition containing 1-imidazolylmethyl-substituted 2-naphthol compound of the general formula (I) in combination with a phenol selected from the group consisting of 1,4-n-pentylphenol, n-hexylphenol, n-heptylphenol, n-octyphenol, n-decylphenol, and O,O'-diallyl-bisphenol A with a weight ratio of the compound of formula (I) to phenol being from 25:75 to 50:50 as presently claimed.

Therefore, in view of the remarks above, Applicant respectfully requests the rejection of claims under 35 U.S.C. § 103(a) be withdrawn.

Conclusion

It is respectfully submitted that claims 1-5, 8-11 and 13-15 are patentable and are in a condition for allowance. Applicant respectfully requests all pending claims be allowed and that the application pass to issuance.

Respectfully Submitted,

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